



8165 E Kaiser Blvd. Anaheim, CA 92808
www.lightlaboratory.com

Report No: L011705602R01



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Issue Date: 2/8/2017

Report Prepared For: Cerno LLC
1751 Mc Gaw Ave. Irvine, CA 92614

Model Number: 03-136-W

Test: Electrical and Photometric tests

Standards Used: Appropriate part or all test guidelines were used for test performed:
IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products
ANSI C82.77:2002: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Catalog number is 03-136-W. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 1/26/17

Date of Tests: 1/30/17 - 1/30/17

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	11/28/17
ITECH	IT6122	PS-DC03-S1	11/28/17
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/28/17
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

Test Summary

Manufacturer:	Cerno LLC
Model Number:	03-136-W
Driver Model Number:	ROAL RLDD015L-700
Total Lumens:	604.55
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.13
Input Power (W):	15.35
Input Power Factor:	0.96
Current ATHD @ 120V(%):	21%
Current ATHD @ 277V(%):	N/A
Efficacy:	39
Color Rendering Index (CRI):	94
Correlated Color Temperature (K):	2688
Chromaticity Coordinate x:	0.4617
Chromaticity Coordinate y:	0.4123
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	1:00
Total Operating Time (Hours):	2:55
Off State Power(W):	0.00

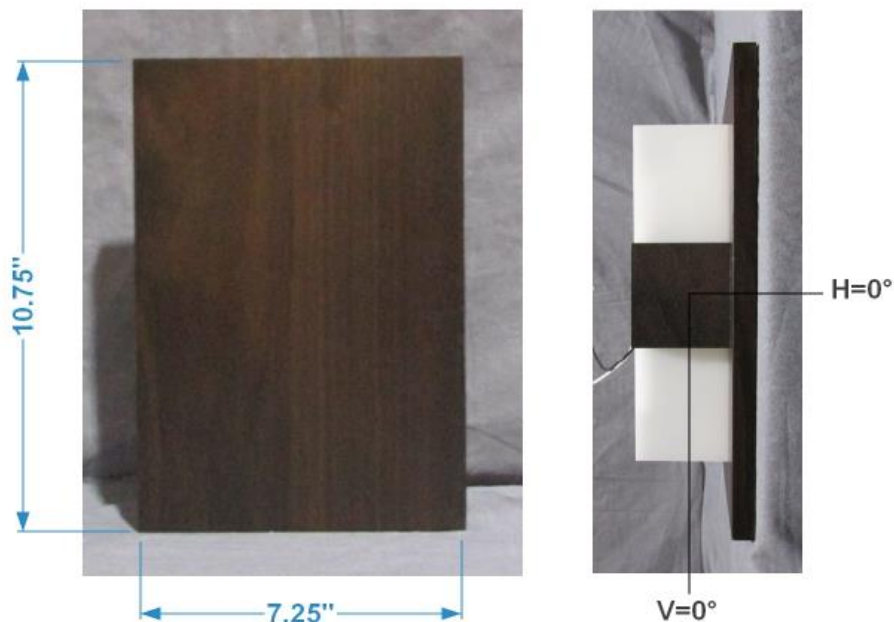
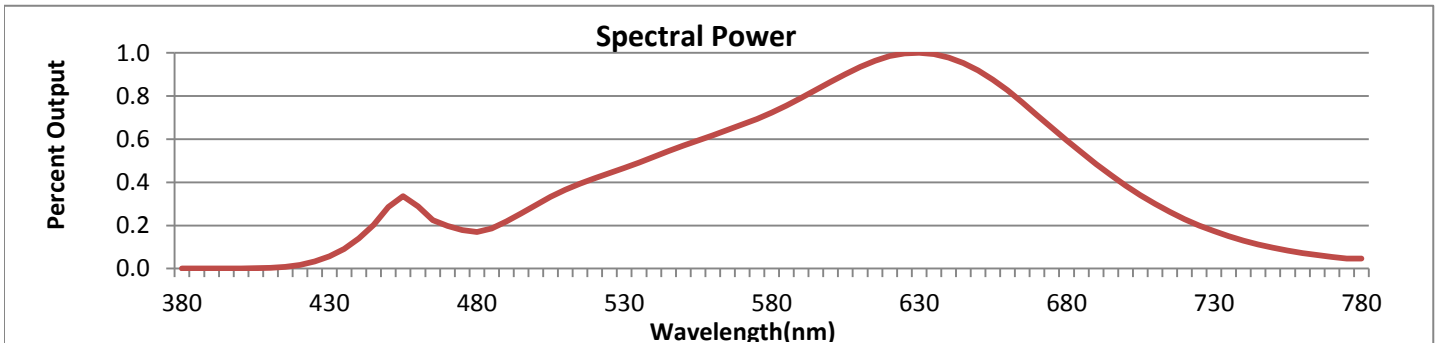


FIG. 1 LUMINAIRE



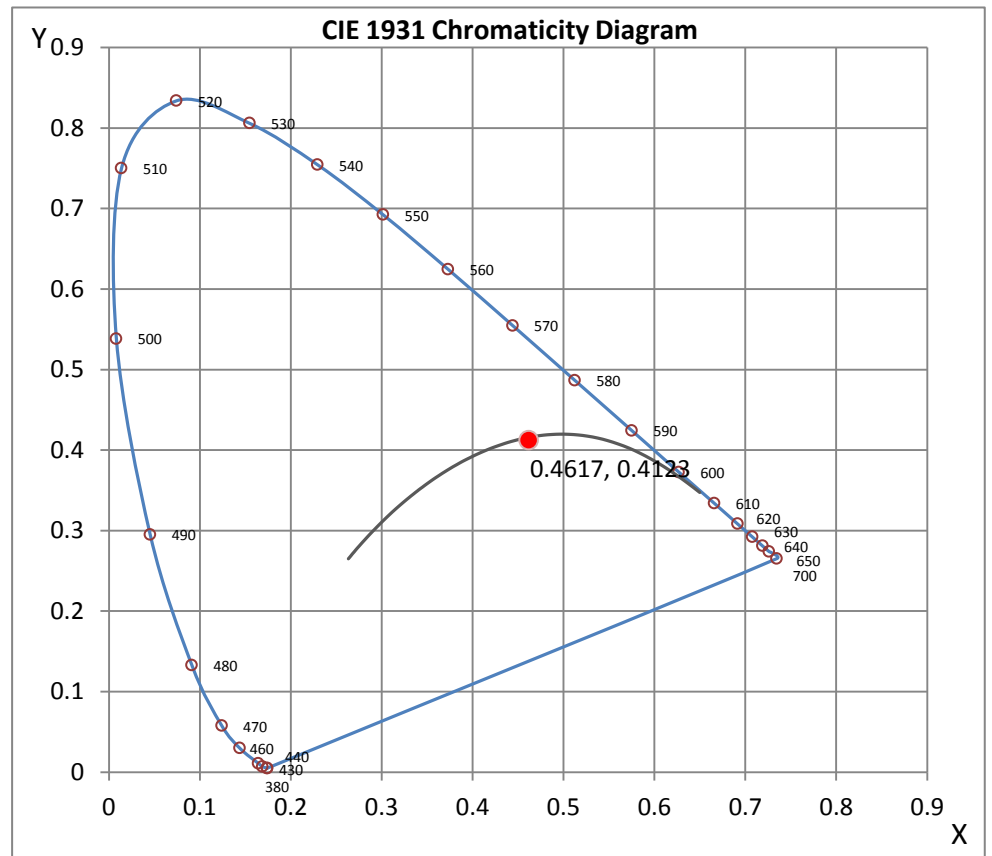
Wavelength	W/m ² nm	440	0.1394	510	0.3657	580	0.7234	650	0.9187	720	0.2297
380	0.0007	450	0.2850	520	0.4186	590	0.7917	660	0.8273	730	0.1734
390	0.0008	460	0.2885	530	0.4670	600	0.8655	670	0.7115	740	0.1298
400	0.0011	470	0.1979	540	0.5185	610	0.9357	680	0.5958	750	0.0971
410	0.0035	480	0.1703	550	0.5707	620	0.9856	690	0.4839	760	0.0720
420	0.0173	490	0.2179	560	0.6185	630	1.0000	700	0.3847	770	0.0536
430	0.0563	500	0.2947	570	0.6677	640	0.9788	710	0.3003	780	0.0462

CRI & CCT

x	0.4617
y	0.4123
u'	0.2629
v'	0.5283
CRI	93.70
CCT	2688
Duv	0.00048

R Values

R1	93.96
R2	96.45
R3	97.31
R4	94.11
R5	93.38
R6	95.77
R7	93.78
R8	85.20
R9	67.32
R10	90.55
R11	94.77
R12	83.84
R13	94.55
R14	97.55



Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : JEFF AHN

Test Report Released by:



Jeff Ahn
Engineering Manager

Test Report Reviewed by:



Steve Kang
Quality Assurance

**Attached are photometric data reports. Total number of pages: 14*



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Photometric Test Report

IES INDOOR REPORT

PHOTOMETRIC FILENAME : L011705602.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L011705602
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 2/1/2017
[MANUFAC] Cerno LLC
[LUMCAT] 03-136-W
[LUMINAIRE] Tersus Sconce
[BALLASTCAT] ROAL RLDD015L-700
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[_INPUT] 120VAC, 15.35W
[_TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	605
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	39
Total Luminaire Watts	15.35
Ballast Factor	1.00
CIE Type	General Diffuse
Spacing Criterion (0-180)	N.A.
Spacing Criterion (90-270)	N.A.
Spacing Criterion (Diagonal)	N.A.
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	0.10 ft
Luminous Width (90-270)	0.10 ft
Luminous Height	0.35 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	1254	1544	19051
55	406	1601	12408
65	356	1564	12242
75	343	1536	11349
85	361	1590	11155

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L011705602.IES

CANDELA TABULATION

	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
0.0	133.74	133.74	133.74	133.74	133.74	133.74	133.74	133.74	133.74	133.74
2.5	135.84	135.88	135.91	135.95	135.86	135.82	135.77	135.71	135.63	135.53
5.0	137.25	137.30	137.35	137.31	137.30	137.26	137.20	137.13	137.04	136.94
7.5	136.89	136.97	137.06	137.15	137.25	137.36	137.47	137.59	137.72	137.87
10.0	129.52	129.56	130.05	130.66	131.51	132.59	133.90	135.41	137.17	137.81
12.5	103.93	103.85	105.77	108.18	111.60	115.93	121.16	127.36	131.10	133.57
15.0	67.32	67.18	70.46	74.58	80.29	87.32	96.05	105.31	113.84	123.27
17.5	40.57	40.48	43.32	46.84	51.43	57.09	63.79	75.29	88.82	102.91
20.0	27.58	27.57	29.19	31.15	33.71	36.86	41.88	50.76	60.77	76.91
22.5	25.38	25.41	25.75	26.15	26.65	27.22	30.23	34.66	41.76	53.84
25.0	23.42	23.47	23.69	24.06	24.69	25.58	26.25	26.91	31.24	36.87
27.5	17.85	18.03	18.71	19.73	21.33	22.99	24.19	25.65	26.48	29.91
30.0	10.78	11.01	11.90	13.32	15.29	17.55	20.25	22.70	25.26	26.40
32.5	9.60	9.54	9.51	9.46	9.20	11.08	14.20	17.81	21.54	25.07
35.0	8.42	8.38	8.35	8.31	8.04	7.70	7.81	11.78	16.38	21.26
37.5	7.24	7.22	7.21	7.14	6.94	6.57	6.25	6.04	10.61	16.38
40.0	6.07	6.07	6.09	6.03	5.86	5.54	5.38	5.33	6.51	10.96
42.5	4.89	4.92	4.99	4.98	4.85	4.68	4.59	4.85	5.26	7.78
45.0	3.71	3.77	3.91	3.99	3.95	3.93	4.06	4.41	5.15	6.04
47.5	2.53	2.63	2.85	3.06	3.16	3.27	3.62	4.20	5.02	6.29
50.0	1.35	1.50	1.84	2.22	2.51	2.80	3.25	3.99	5.12	6.49
52.5	1.33	1.37	1.43	1.51	1.95	2.38	2.97	3.88	5.15	6.72
55.0	1.30	1.34	1.42	1.51	1.57	2.00	2.68	3.74	5.17	6.89
57.5	1.27	1.32	1.41	1.51	1.57	1.62	2.39	3.56	5.13	6.99
60.0	1.25	1.30	1.40	1.51	1.58	1.59	2.01	3.30	5.03	7.06
62.5	1.22	1.29	1.41	1.52	1.57	1.58	1.59	3.00	4.90	7.11
65.0	1.19	1.27	1.42	1.53	1.57	1.58	1.63	2.64	4.74	7.14
67.5	1.17	1.26	1.43	1.54	1.57	1.59	1.69	2.26	4.58	7.17
70.0	1.14	1.25	1.46	1.56	1.57	1.63	1.79	2.06	4.43	7.18
72.5	1.15	1.26	1.49	1.56	1.58	1.70	1.93	2.26	4.29	7.19
75.0	1.16	1.29	1.50	1.56	1.61	1.79	2.10	2.50	4.17	7.20
77.5	1.17	1.33	1.48	1.54	1.64	1.90	2.27	2.72	4.09	7.24
80.0	1.18	1.35	1.45	1.52	1.68	2.01	2.45	2.95	4.06	7.30
82.5	1.19	1.36	1.43	1.52	1.70	2.14	2.65	3.17	4.04	7.38
85.0	1.20	1.34	1.42	1.56	1.76	2.27	2.81	3.35	4.05	7.42
87.5	1.21	1.32	1.47	1.64	1.82	2.36	2.92	3.47	4.02	7.47
90.0	0.00	1.37	1.53	1.69	1.84	2.40	2.96	3.52	4.07	7.50
92.5	1.21	1.32	1.47	1.64	1.82	2.36	2.92	3.47	4.02	7.47
95.0	1.20	1.34	1.42	1.56	1.76	2.27	2.81	3.35	4.05	7.42
97.5	1.19	1.36	1.43	1.52	1.70	2.14	2.65	3.17	4.04	7.38
100.0	1.18	1.35	1.45	1.52	1.68	2.01	2.45	2.95	4.06	7.30
102.5	1.17	1.33	1.48	1.54	1.64	1.90	2.27	2.72	4.09	7.24
105.0	1.16	1.29	1.50	1.56	1.61	1.79	2.10	2.49	4.17	7.20
107.5	1.15	1.26	1.49	1.56	1.58	1.70	1.93	2.26	4.29	7.19
110.0	1.14	1.25	1.46	1.56	1.57	1.63	1.79	2.06	4.43	7.18
112.5	1.17	1.26	1.43	1.54	1.57	1.59	1.69	2.26	4.58	7.17
115.0	1.19	1.27	1.42	1.53	1.57	1.58	1.63	2.64	4.74	7.14
117.5	1.22	1.29	1.41	1.52	1.57	1.58	1.59	3.00	4.90	7.11
120.0	1.25	1.30	1.40	1.51	1.58	1.59	2.01	3.30	5.03	7.06
122.5	1.27	1.32	1.41	1.51	1.57	1.62	2.39	3.56	5.13	6.99
125.0	1.30	1.34	1.42	1.51	1.57	2.00	2.68	3.74	5.17	6.89
127.5	1.33	1.37	1.43	1.51	1.95	2.38	2.97	3.88	5.14	6.72
130.0	1.35	1.50	1.84	2.22	2.51	2.80	3.25	3.99	5.12	6.49
132.5	2.53	2.63	2.85	3.06	3.16	3.27	3.62	4.20	5.01	6.29

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L011705602.IES

CANDELA TABULATION - (Cont.)

135.0	3.71	3.77	3.91	3.99	3.95	3.93	4.06	4.41	5.15	6.04
137.5	4.89	4.92	4.99	4.98	4.85	4.68	4.59	4.85	5.26	7.78
140.0	6.07	6.07	6.09	6.03	5.86	5.54	5.38	5.33	6.51	10.96
142.5	7.24	7.22	7.21	7.14	6.94	6.57	6.25	6.04	10.61	16.38
145.0	8.42	8.38	8.35	8.31	8.04	7.70	7.81	11.78	16.38	21.26
147.5	9.60	9.54	9.51	9.46	9.20	11.11	14.20	17.84	21.54	25.07
150.0	10.78	11.01	11.90	13.32	15.29	17.55	20.25	22.70	25.26	26.40
152.5	17.85	18.03	18.71	19.73	21.35	22.99	24.19	25.65	26.48	29.91
155.0	23.42	23.47	23.69	24.06	24.69	25.58	26.25	26.91	31.24	36.87
157.5	25.38	25.41	25.75	26.15	26.65	27.22	30.23	34.66	41.80	53.84
160.0	27.58	27.57	29.19	31.15	33.71	36.86	41.88	50.76	60.77	76.91
162.5	40.57	40.48	43.32	46.84	51.43	57.09	63.79	75.29	88.82	102.91
165.0	67.32	67.18	70.46	74.58	80.29	87.32	96.05	105.31	113.84	123.27
167.5	103.93	103.85	105.77	108.18	111.60	115.93	121.16	127.36	131.10	133.57
170.0	129.52	129.56	130.05	130.66	131.51	132.59	133.89	135.41	137.17	137.81
172.5	136.89	136.97	137.06	137.15	137.25	137.36	137.47	137.59	137.72	137.87
175.0	137.25	137.30	137.35	137.31	137.30	137.26	137.20	137.13	137.04	136.94
177.5	135.84	135.88	135.91	135.95	135.86	135.82	135.77	135.71	135.63	135.53
180.0	133.00	133.00	133.00	133.00	133.00	133.00	133.00	133.00	133.00	133.00

**Vert.
Angles**

Horizontal Angles

	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>	<u>95</u>
0.0	133.74	133.74	133.74	133.74	133.74	133.74	133.74	133.74	133.74	133.74
2.5	135.43	135.31	135.19	135.05	134.90	134.75	134.59	134.42	134.25	134.67
5.0	136.82	136.69	136.55	136.28	136.00	135.71	135.42	135.09	134.76	135.59
7.5	137.92	137.76	137.59	137.41	137.21	136.82	136.38	135.92	135.44	136.67
10.0	138.04	138.30	138.57	138.35	138.13	137.89	137.34	136.75	136.11	137.76
12.5	136.33	138.16	138.45	138.77	138.63	138.32	137.89	137.19	136.49	138.46
15.0	130.54	134.14	137.92	138.39	138.89	138.62	138.31	137.61	136.87	139.13
17.5	115.25	128.11	133.18	137.70	138.29	138.58	138.24	137.61	136.82	139.32
20.0	95.16	111.27	127.15	133.50	137.40	138.32	138.09	137.57	136.78	139.44
22.5	70.45	92.17	112.21	127.78	136.03	137.21	137.45	137.00	136.21	139.04
25.0	50.63	70.08	94.42	118.37	130.69	135.87	136.71	136.35	135.64	138.56
27.5	36.12	50.75	75.29	102.62	124.17	133.85	135.37	135.16	134.36	137.45
30.0	30.01	38.63	56.59	85.43	116.35	131.36	133.86	133.88	133.08	136.20
32.5	26.85	30.68	43.04	68.94	102.17	123.35	129.22	129.20	128.11	132.28
35.0	25.28	28.33	34.60	53.26	85.34	113.14	123.75	124.39	123.15	128.15
37.5	22.32	26.32	29.09	38.65	68.27	97.90	109.46	109.59	108.70	113.53
40.0	17.58	23.71	27.22	32.99	51.95	80.32	93.65	94.31	94.25	98.47
42.5	13.06	19.99	24.99	28.53	40.39	62.72	74.72	74.95	75.31	78.92
45.0	9.89	15.78	21.93	25.46	32.27	46.04	55.42	55.29	56.37	59.18
47.5	8.49	12.76	18.78	23.11	27.24	36.26	45.03	46.56	48.09	50.80
50.0	8.31	11.58	16.34	21.36	25.20	30.77	36.27	38.39	39.81	42.81
52.5	8.52	11.22	15.17	19.75	24.04	28.55	33.89	37.69	39.75	42.39
55.0	8.81	11.31	14.67	19.02	23.58	28.02	32.91	37.28	39.70	42.31
57.5	9.08	11.52	14.70	18.59	23.18	27.85	32.65	37.56	40.26	42.73
60.0	9.32	11.76	15.00	18.64	22.92	27.82	32.56	37.88	40.83	43.17
62.5	9.53	12.10	15.28	18.84	22.78	27.75	32.46	37.78	40.87	43.15
65.0	9.74	12.46	15.57	19.08	22.86	27.69	32.40	37.68	40.92	43.12
67.5	9.91	12.73	15.85	19.38	23.02	27.66	32.32	37.19	40.34	42.39
70.0	10.06	13.00	16.13	19.62	23.25	27.67	32.27	36.69	39.76	41.60
72.5	10.18	13.24	16.43	19.91	23.51	27.75	32.25	36.20	39.08	40.79
75.0	10.31	13.46	16.70	20.21	23.80	27.88	32.25	35.70	38.41	39.94
77.5	10.44	13.69	16.97	20.51	24.10	28.09	32.32	35.59	38.11	39.53
80.0	10.58	13.88	17.22	20.81	24.43	28.35	32.41	35.44	37.81	39.11

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L011705602.IES

CANDELA TABULATION - (Cont.)

82.5	10.73	14.07	17.44	21.04	24.67	28.48	32.34	35.29	37.44	38.68
85.0	10.81	14.21	17.61	21.24	24.85	28.58	32.38	35.13	37.07	38.24
87.5	10.87	14.28	17.67	21.31	25.00	28.71	32.35	35.01	36.89	38.00
90.0	10.92	14.34	17.76	21.41	25.12	28.84	32.33	34.90	36.70	37.76
92.5	10.87	14.28	17.67	21.31	25.00	28.71	32.35	35.01	36.89	38.00
95.0	10.81	14.21	17.61	21.24	24.85	28.58	32.38	35.13	37.07	38.25
97.5	10.73	14.07	17.44	21.04	24.67	28.48	32.34	35.29	37.44	38.68
100.0	10.58	13.88	17.22	20.81	24.43	28.35	32.41	35.44	37.81	39.11
102.5	10.44	13.69	16.97	20.51	24.10	28.09	32.32	35.59	38.11	39.53
105.0	10.31	13.46	16.70	20.21	23.80	27.88	32.25	35.71	38.41	39.96
107.5	10.18	13.24	16.43	19.91	23.51	27.75	32.25	36.20	39.08	40.79
110.0	10.06	13.00	16.13	19.62	23.25	27.67	32.27	36.71	39.76	41.63
112.5	9.91	12.73	15.85	19.38	23.02	27.66	32.32	37.19	40.34	42.39
115.0	9.74	12.46	15.57	19.08	22.86	27.69	32.40	37.68	40.92	43.13
117.5	9.53	12.10	15.28	18.84	22.78	27.75	32.46	37.78	40.87	43.15
120.0	9.32	11.76	15.00	18.64	22.92	27.82	32.56	37.86	40.83	43.16
122.5	9.08	11.52	14.70	18.59	23.18	27.85	32.65	37.56	40.26	42.73
125.0	8.81	11.31	14.67	19.02	23.58	28.02	32.91	37.28	39.70	42.31
127.5	8.51	11.22	15.17	19.75	24.04	28.55	33.89	37.69	39.75	42.39
130.0	8.31	11.58	16.34	21.36	25.20	30.77	36.27	38.39	39.81	42.81
132.5	8.49	12.76	18.78	23.11	27.24	36.26	45.03	46.56	48.09	50.80
135.0	9.89	15.78	21.93	25.46	32.27	46.04	55.42	55.29	56.37	59.18
137.5	13.08	19.99	24.99	28.53	40.39	62.72	74.72	74.95	75.31	78.92
140.0	17.58	23.71	27.22	32.99	51.95	80.32	93.65	94.31	94.25	98.47
142.5	22.32	26.32	29.09	38.65	68.27	97.90	109.46	109.59	108.70	113.53
145.0	25.28	28.33	34.60	53.26	85.34	113.14	123.75	124.38	123.15	128.15
147.5	26.85	30.68	43.04	68.94	102.17	123.35	129.22	129.20	128.11	132.28
150.0	30.01	38.63	56.59	85.43	116.35	131.36	133.86	133.92	133.08	136.25
152.5	36.12	50.75	75.29	102.62	124.17	133.85	135.37	135.16	134.36	137.45
155.0	50.63	70.08	94.42	118.37	130.69	135.87	136.71	136.37	135.64	138.58
157.5	70.45	92.17	112.21	127.78	136.03	137.21	137.45	137.00	136.21	139.04
160.0	95.16	111.27	127.15	133.50	137.40	138.32	138.09	137.58	136.78	139.45
162.5	115.25	128.11	133.18	137.70	138.29	138.58	138.24	137.61	136.82	139.32
165.0	130.54	134.14	137.92	138.39	138.89	138.62	138.31	137.61	136.87	139.13
167.5	136.33	138.16	138.45	138.77	138.63	138.32	137.89	137.19	136.49	138.46
170.0	138.04	138.30	138.57	138.35	138.13	137.89	137.34	136.74	136.11	137.75
172.5	137.92	137.76	137.59	137.41	137.21	136.82	136.38	135.92	135.44	136.67
175.0	136.82	136.69	136.55	136.28	136.00	135.71	135.41	135.09	134.76	135.59
177.5	135.43	135.31	135.19	135.05	134.90	134.75	134.59	134.42	134.25	134.67
180.0	133.00	133.00	133.00	133.00	133.00	133.00	133.00	133.00	133.00	133.00

Vert. Angles	Horizontal Angles									
	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>	<u>120</u>	<u>125</u>	<u>130</u>	<u>135</u>	<u>140</u>	<u>145</u>
0.0	133.74	133.74	133.74	133.74	133.74	133.74	133.74	133.74	133.74	133.74
2.5	135.08	135.48	135.87	136.25	136.60	136.94	137.25	137.53	137.79	138.02
5.0	136.41	137.19	137.95	138.69	139.39	139.65	139.87	140.08	140.25	140.40
7.5	137.87	139.05	140.07	140.52	140.90	141.25	141.56	141.95	142.38	142.78
10.0	139.35	140.77	141.41	141.95	142.45	143.18	143.86	144.48	145.04	145.54
12.5	140.41	141.60	142.40	143.25	144.29	145.25	146.13	146.93	147.65	148.17
15.0	141.23	142.34	143.28	144.72	145.98	147.14	148.24	148.96	149.40	149.74
17.5	141.44	142.80	144.38	146.07	147.58	148.95	149.57	150.13	149.95	149.63
20.0	141.59	143.15	145.29	147.13	148.80	149.66	150.28	149.87	149.25	147.84
22.5	141.37	143.57	145.96	147.99	149.32	149.98	149.47	148.38	146.78	144.42
25.0	141.17	143.79	146.27	148.25	149.23	148.93	147.73	145.62	142.41	139.36
27.5	140.51	143.54	146.15	147.88	148.14	147.01	144.57	140.96	136.63	132.06

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CANDELA TABULATION - (Cont.)

30.0	139.84	143.05	145.49	146.72	146.03	143.74	139.80	134.80	129.57	123.59
32.5	136.19	140.09	143.28	144.75	142.79	139.04	133.95	127.39	120.56	114.54
35.0	131.95	136.09	138.88	139.03	137.37	133.21	126.04	118.53	111.46	104.84
37.5	119.04	125.58	130.80	133.08	130.52	124.49	117.47	109.31	101.97	95.29
40.0	104.47	110.81	115.63	118.60	119.10	115.25	107.49	99.76	92.52	86.60
42.5	85.79	92.34	99.03	103.50	103.89	102.46	97.89	90.38	84.14	79.00
45.0	66.13	71.73	79.17	84.68	88.95	90.38	87.12	81.93	76.31	72.72
47.5	55.54	58.80	62.70	66.38	73.87	78.85	78.36	73.85	70.02	67.71
50.0	46.74	50.56	54.46	57.90	62.72	68.83	70.06	66.88	64.91	64.54
52.5	44.93	46.87	48.53	50.63	56.36	62.30	62.89	61.33	61.15	62.96
55.0	44.51	46.22	47.50	48.74	51.81	56.20	57.39	57.23	59.99	62.73
57.5	44.64	45.93	46.62	47.25	49.40	52.31	53.03	55.63	59.39	62.03
60.0	44.85	45.77	46.10	46.42	47.36	49.05	51.14	54.61	58.34	61.10
62.5	44.66	45.37	45.48	45.48	46.07	47.55	49.83	53.51	57.17	59.50
65.0	44.38	44.85	44.78	44.72	45.09	46.34	48.89	52.38	55.76	58.02
67.5	43.63	44.12	44.07	44.00	44.28	45.59	47.97	51.25	54.42	56.50
70.0	42.81	43.30	43.38	43.41	43.66	44.85	47.11	50.19	52.93	55.04
72.5	41.95	42.56	42.77	42.85	43.04	44.23	46.43	49.17	51.62	53.50
75.0	41.09	41.87	42.23	42.37	42.54	43.68	45.71	48.19	50.41	52.06
77.5	40.61	41.35	41.77	41.91	42.04	43.15	44.99	47.32	49.34	50.96
80.0	40.16	40.85	41.36	41.48	41.56	42.65	44.37	46.53	48.46	50.06
82.5	39.70	40.37	40.91	41.04	41.08	42.15	43.81	45.88	47.77	49.36
85.0	39.22	39.89	40.45	40.59	40.61	41.70	43.35	45.39	47.24	48.82
87.5	38.95	39.61	40.14	40.27	40.28	41.39	43.02	45.03	46.88	48.42
90.0	38.67	39.34	39.85	39.99	40.00	41.14	42.79	44.83	46.71	48.29
92.5	38.95	39.61	40.14	40.27	40.28	41.39	43.02	45.03	46.88	48.42
95.0	39.24	39.89	40.45	40.59	40.61	41.70	43.35	45.39	47.24	48.82
97.5	39.70	40.37	40.91	41.04	41.08	42.15	43.81	45.88	47.77	49.36
100.0	40.16	40.85	41.36	41.48	41.56	42.65	44.37	46.53	48.46	50.06
102.5	40.61	41.35	41.77	41.91	42.04	43.15	44.99	47.32	49.34	50.96
105.0	41.09	41.87	42.23	42.37	42.54	43.68	45.71	48.19	50.41	52.08
107.5	41.95	42.56	42.77	42.85	43.04	44.23	46.43	49.17	51.62	53.50
110.0	42.81	43.30	43.38	43.41	43.66	44.85	47.11	50.19	52.93	55.04
112.5	43.63	44.12	44.07	44.00	44.28	45.59	47.97	51.25	54.42	56.50
115.0	44.38	44.85	44.78	44.72	45.09	46.34	48.89	52.38	55.76	58.02
117.5	44.66	45.37	45.48	45.48	46.07	47.55	49.83	53.51	57.17	59.50
120.0	44.85	45.77	46.10	46.42	47.36	49.05	51.14	54.61	58.34	61.10
122.5	44.64	45.93	46.62	47.25	49.40	52.31	53.03	55.63	59.39	62.03
125.0	44.51	46.22	47.50	48.74	51.81	56.20	57.39	57.23	59.99	62.73
127.5	44.93	46.87	48.53	50.63	56.36	62.30	62.97	61.33	61.19	62.96
130.0	46.74	50.56	54.46	57.90	62.72	68.83	70.06	66.88	64.91	64.54
132.5	55.54	58.80	62.70	66.38	73.87	78.85	78.36	73.85	70.08	67.71
135.0	66.13	71.73	79.17	84.68	88.95	90.38	87.12	81.93	76.31	72.72
137.5	85.79	92.34	99.03	103.50	103.89	102.46	98.07	90.38	84.14	79.00
140.0	104.47	110.81	115.63	118.60	119.10	115.25	107.49	99.76	92.52	86.60
142.5	119.04	125.58	130.80	133.08	130.52	124.49	117.47	109.31	101.97	95.29
145.0	131.95	136.09	138.88	139.03	137.36	133.21	126.04	118.53	111.46	104.84
147.5	136.19	140.09	143.28	144.75	142.79	139.04	133.95	127.39	120.56	114.60
150.0	139.84	143.05	145.49	146.72	146.03	143.74	139.80	134.80	129.57	123.59
152.5	140.51	143.54	146.15	147.88	148.14	147.01	144.57	140.96	136.63	132.06
155.0	141.17	143.79	146.27	148.25	149.23	148.93	147.73	145.62	142.41	139.37
157.5	141.37	143.57	145.96	147.99	149.32	149.98	149.47	148.38	146.79	144.42
160.0	141.59	143.15	145.29	147.13	148.80	149.66	150.28	149.87	149.25	147.84
162.5	141.44	142.80	144.38	146.07	147.58	148.95	149.57	150.13	149.95	149.63
165.0	141.23	142.34	143.28	144.72	145.98	147.14	148.24	148.96	149.40	149.74
167.5	140.41	141.60	142.40	143.25	144.29	145.25	146.13	146.93	147.65	148.17

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CANDELA TABULATION - (Cont.)

170.0	139.35	140.77	141.41	141.95	142.45	143.18	143.86	144.48	145.04	145.54
172.5	137.87	139.05	140.07	140.52	140.90	141.25	141.56	141.95	142.38	142.78
175.0	136.39	137.19	137.95	138.69	139.39	139.65	139.87	140.08	140.25	140.40
177.5	135.08	135.48	135.87	136.25	136.60	136.94	137.25	137.53	137.79	138.02
180.0	133.00	133.00	133.00	133.00	133.00	133.00	133.00	133.00	133.00	133.00

Vert. Horizontal Angles
Angles

	150	155	160	165	170	175	180
0.0	133.74	133.74	133.74	133.74	133.74	133.74	133.74
2.5	138.21	138.37	138.50	138.60	138.65	138.67	138.65
5.0	140.52	140.61	140.66	140.69	140.68	140.65	140.58
7.5	143.11	143.39	143.60	143.75	143.82	143.83	143.76
10.0	145.96	146.35	146.67	146.90	147.04	147.09	147.04
12.5	148.40	148.57	148.73	148.85	148.91	148.89	148.81
15.0	149.63	149.35	149.10	148.91	148.74	148.59	148.46
17.5	149.31	148.17	147.29	146.56	146.00	145.60	145.37
20.0	146.66	144.93	143.21	141.83	140.77	140.05	139.69
22.5	141.98	139.66	136.97	134.84	133.25	132.20	131.72
25.0	135.45	132.29	128.92	126.15	124.12	122.74	122.13
27.5	127.51	123.27	119.67	116.40	114.05	112.43	111.72
30.0	118.38	113.63	109.57	106.16	103.53	101.77	101.02
32.5	108.67	103.82	99.39	95.98	93.18	91.32	90.47
35.0	99.07	94.01	89.65	86.63	84.02	82.25	81.38
37.5	89.83	85.26	81.48	78.77	76.60	75.06	74.18
40.0	81.78	78.08	74.96	72.63	70.80	69.44	68.47
42.5	75.23	72.23	69.98	68.12	66.58	65.47	64.45
45.0	69.94	67.99	66.56	65.36	64.24	63.40	62.33
47.5	66.35	65.54	65.28	64.56	63.42	61.82	59.00
50.0	64.83	65.29	65.40	64.80	63.19	60.49	55.68
52.5	64.63	65.46	65.59	65.29	61.68	55.43	46.84
55.0	64.52	65.01	65.33	64.31	59.71	50.56	38.00
57.5	63.38	64.24	63.96	63.07	58.20	48.60	36.95
60.0	62.14	62.65	62.50	61.40	56.33	47.09	35.90
62.5	60.82	61.00	60.77	59.72	54.56	45.58	35.10
65.0	59.22	59.48	59.09	57.78	52.54	43.68	34.30
67.5	57.68	57.92	57.46	55.84	50.36	41.31	32.62
70.0	56.16	56.45	55.80	54.31	48.09	38.97	30.95
72.5	54.62	55.06	54.32	51.89	45.86	36.68	29.26
75.0	53.19	53.63	52.95	50.29	43.61	34.27	27.58
77.5	52.02	52.52	51.77	48.97	41.85	32.36	26.05
80.0	51.08	51.67	51.09	47.87	40.35	30.44	24.52
82.5	50.34	51.01	50.69	47.64	39.32	28.78	22.84
85.0	49.88	50.55	50.35	47.90	38.91	28.06	21.15
87.5	49.56	50.29	50.37	48.86	40.22	28.13	19.49
90.0	49.48	50.17	50.43	49.36	42.02	28.10	17.84
92.5	49.56	50.29	50.37	48.86	40.22	28.13	19.49
95.0	49.89	50.55	50.35	47.90	38.91	28.06	21.15
97.5	50.34	51.01	50.69	47.64	39.32	28.78	22.84
100.0	51.08	51.67	51.09	47.87	40.35	30.44	24.52
102.5	52.02	52.52	51.77	48.97	41.85	32.36	26.05
105.0	53.19	53.63	52.95	50.29	43.61	34.27	27.58
107.5	54.62	55.06	54.32	51.89	45.86	36.68	29.26
110.0	56.16	56.45	55.80	54.31	48.09	38.97	30.95
112.5	57.68	57.92	57.46	55.84	50.36	41.31	32.62
115.0	59.22	59.48	59.09	57.78	52.54	43.68	34.30

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CANDELA TABULATION - (Cont.)

117.5	60.82	61.00	60.77	59.72	54.56	45.58	35.10
120.0	62.14	62.65	62.50	61.40	56.33	47.09	35.90
122.5	63.38	64.24	63.96	63.07	58.20	48.60	36.95
125.0	64.52	65.01	65.33	64.31	59.71	50.56	38.00
127.5	64.63	65.46	65.59	65.29	61.68	55.43	46.84
130.0	64.83	65.29	65.40	64.80	63.19	60.49	55.68
132.5	66.35	65.54	65.28	64.56	63.42	61.82	59.00
135.0	69.94	67.99	66.56	65.36	64.24	63.40	62.33
137.5	75.23	72.23	69.98	68.12	66.58	65.47	64.45
140.0	81.78	78.08	74.96	72.63	70.80	69.44	68.47
142.5	89.83	85.26	81.48	78.77	76.60	75.06	74.18
145.0	99.07	94.01	89.65	86.63	84.02	82.25	81.38
147.5	108.67	103.85	99.39	95.98	93.18	91.32	90.47
150.0	118.38	113.63	109.57	106.16	103.53	101.77	101.02
152.5	127.51	123.27	119.69	116.40	114.05	112.43	111.72
155.0	135.45	132.29	128.92	126.15	124.12	122.74	122.13
157.5	141.98	139.65	136.97	134.84	133.25	132.20	131.72
160.0	146.66	144.93	143.21	141.83	140.77	140.05	139.69
162.5	149.31	148.17	147.29	146.56	146.00	145.60	145.37
165.0	149.63	149.35	149.10	148.91	148.74	148.59	148.46
167.5	148.40	148.57	148.73	148.85	148.91	148.89	148.81
170.0	145.95	146.35	146.67	146.90	147.04	147.09	147.04
172.5	143.11	143.39	143.60	143.75	143.82	143.83	143.76
175.0	140.52	140.61	140.66	140.69	140.68	140.65	140.58
177.5	138.21	138.37	138.50	138.60	138.65	138.67	138.65
180.0	133.00	133.00	133.00	133.00	133.00	133.00	133.00

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	49.19	N.A.	8.10
0-30	96.20	N.A.	15.90
0-40	144.19	N.A.	23.90
0-60	210.85	N.A.	34.90
0-80	272.17	N.A.	45.00
0-90	302.27	N.A.	50.00
10-90	289.06	N.A.	47.80
20-40	95.00	N.A.	15.70
20-50	131.33	N.A.	21.70
40-70	97.50	N.A.	16.10
60-80	61.32	N.A.	10.10
70-80	30.49	N.A.	5.00
80-90	30.10	N.A.	5.00
90-110	60.59	N.A.	10.00
90-120	91.42	N.A.	15.10
90-130	121.76	N.A.	20.10
90-150	206.07	N.A.	34.10
90-180	302.28	N.A.	50.00
110-180	241.68	N.A.	40.00
0-180	604.55	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	13.22
10-20	35.97
20-30	47.02
30-40	47.98
40-50	36.34
50-60	30.33
60-70	30.83
70-80	30.49
80-90	30.10
90-100	30.10
100-110	30.49
110-120	30.83
120-130	30.33
130-140	36.34
140-150	47.98
150-160	47.02
160-170	35.97
170-180	13.21

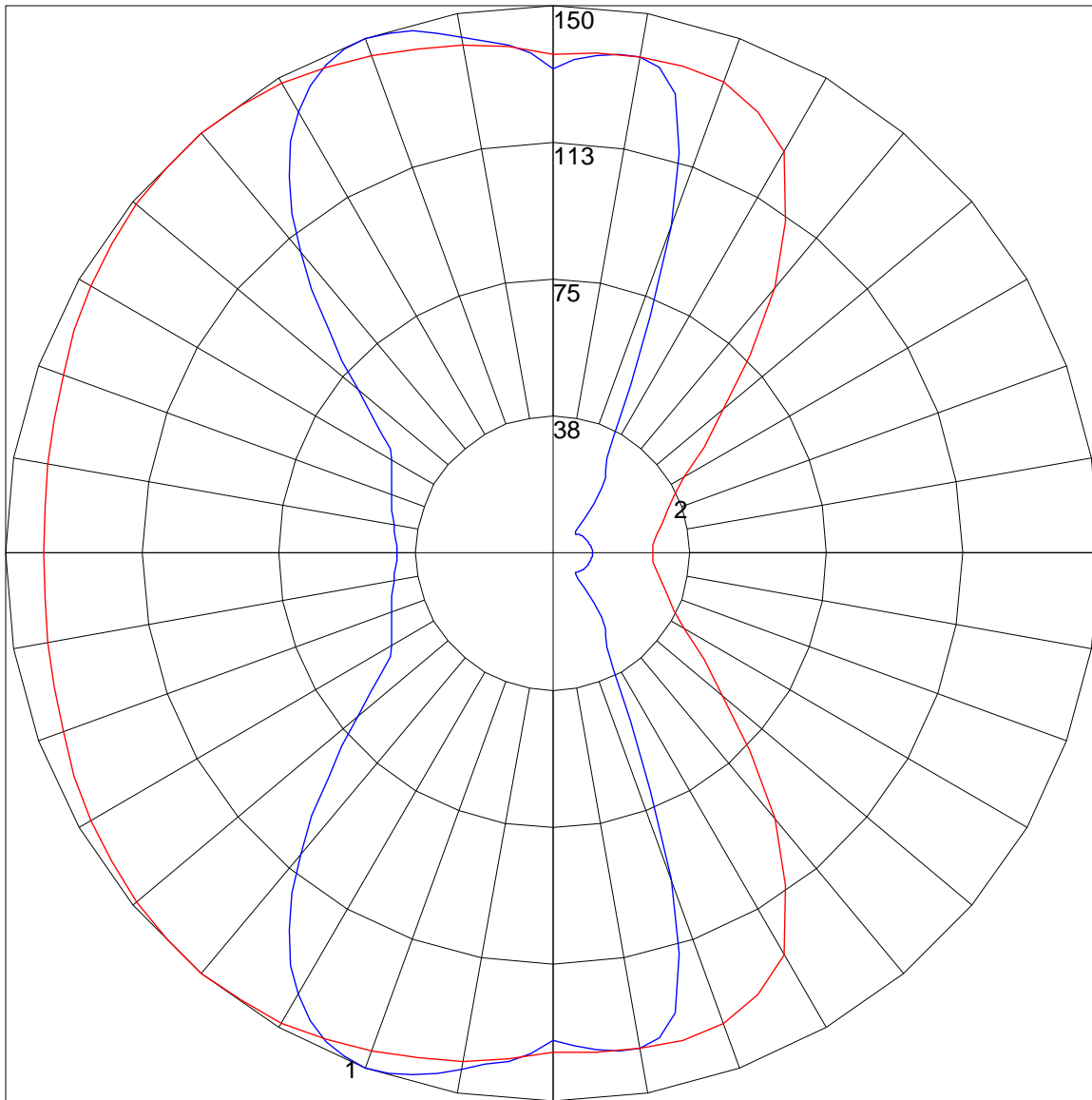
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	96	91	87	82	88	84	80	76	71	68	65	58	56	54	47	45	44	39
2	87	79	73	67	80	73	67	62	62	57	53	51	48	45	41	39	37	32
3	80	70	62	56	73	64	58	52	54	49	45	45	41	38	37	34	31	27
4	73	62	54	48	67	57	50	45	49	43	39	41	36	33	33	30	27	24
5	67	55	47	41	62	51	44	39	44	38	34	37	32	29	30	27	24	21
6	62	50	42	36	57	46	39	34	40	34	30	33	29	26	28	24	22	19
7	58	45	37	32	53	42	35	30	36	31	26	31	26	23	25	22	19	17
8	54	41	34	28	49	39	32	27	33	28	24	28	24	21	24	20	18	15
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16	14
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15	13

POLAR GRAPH



Maximum Candela = 150.28 Located At Horizontal Angle = 130, Vertical Angle = 20
1 - Vertical Plane Through Horizontal Angles (130 - 310) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (20) (Through Max. Cd.)